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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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SECURITY INFORMATION

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SUBJECT	RFT Funkwerk Erfurt Tube Production	DATE DISTR.	22 May 1953
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This is UNEVALUATED Information

THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.
THE APPRAISAL OF CONTENT IS TENTATIVE.
(FOR KEY SEE REVERSE)

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1. RFT Funkwerk Erfurt achieved the following percentages of its planned quota for the second half of 1952:
 - a. Receiving tubes: 103 %
 - b. Transmitting tubes: 107%
 - c. Radio sets (sic) 70-80%
 - d. Secondary installations 80%
2. Initial difficulties encountered in the manufacture of Gnom tubes were overcome by June 1952. The principal difficulties arose from the poor quality glass. The proposed glass soldering procedure was inapplicable. It was, therefore, necessary to use the melting procedure again. The waste caused by internal strain inherent in the melting procedure remained as high as 60 percent in May, but was reduced to 10 percent in June 1952. The high waste rate in the manufacture of the Gnom series, still observed in August, was no longer caused by poor raw materials but was due completely to insufficient tube-developing by the Zentrallabor fuer Empfaengerroehren ((ZLE) (Central Laboratory for Receiving Tubes) of the Erfurt factory. The factory was obliged to eliminate these flaws.
3. The waste rate in the large-scale serial manufacture of the EAA 171 and EF 175 tubes in August, caused by defective glass, was as high as 8 or 9 percent.¹ The three principal defects observed in the EF 175 tube included:
 - a. Geometric defects. By careful checking all dimensions, this flaw was almost completely eliminated.
 - b. Thermal grid emission. It was believed that this defect would soon be eliminated by another system to control the forming process. This system was based on a reduction of the cathode temperature and had proved to be extremely efficient during its first application. If the waste rate caused by thermal grid emission was estimated at 100 percent, it could be reduced by (sic) 80 percent through the new method.

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1. "X" denotes Distribution Indicated By "X"; Field Distribution By "#"

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- c. Burner emission. The thorium content of the wire entailed an emission beyond the admissible degree. Because of a complaint addressed to the manufacturers, suitable tungsten wire had been supplied in the meantime. This defect would, therefore, be eliminated completely.

By these measures the almost 100 percent waste rate in the manufacture of EAA 171 and EF 175 tubes would be reduced to an estimated 40 percent. Numerous failures of EAA 171 tubes resulted from the punch of an inadequate burner insulation. Such failures would be circumvented by the improved construction effected by the plant. The output of EEL 171, ECH 171, and EBF 171 tubes, previously manufactured in small quantities, was to be increased materially. Difficulties in the manufacture of these three tube models were not anticipated.

4. Pursuant to an order of early April 1952, tubes of second quality were excluded from delivery but could be used in the plant or be sold to plant employees. Starting in mid-1952, tubes previously designated as absolute waste material and written off were reformed for up to 80 hours' usage. In August, about 30,000 tubes of various models were kept ready for reforming. Judging by previous experiences, about 12,000 tubes would be salvaged through this procedure.

5. In May, the staff of the ZLE worked on the development of the following tubes:

EF 176, similar to RV 12 - P-2000

EF 177, similar to RV 12 - P-2001

ECF 174, of steeper slope of the emission characteristic than the ECF-12-type tube

EBF 175, a steep pentode for ultra-short waves

DY 01

MR 01, double electrometer tube with tetrodes

RG 62

ECC 171

ECC 172

EDD 171

EC 271

PL 81, similar to the EL-172 tube, but equipped with an improved insulation

One ultra-short wave double pentode

One anode

In September 1952, Engineer Rudolf (fnu) worked on the development of an oxide cathode to achieve an emission of 200 to 300 per square / cm. He also received an order to develop a broad-band tube for ~~radio~~ transmitters.

6. For June, 145 kg of P-2 iron band, 100 to 150 mm wide, were procured, through the DEZ, 47 Behren Strasse, Berlin,

Prior to August, sufficient quantities of P-2 iron were in stock. In October, sufficient quantities of P-2 iron, of good quality, were supplied from the rolling mill at Auerhammer.³ The material was made in Auerhammer by rolling aluminum foils on sheet iron supplied by Hettstedt.⁴

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7. Since the application of Arnico (sic) iron, also from Hettstedt, had an unfavorable influence on emission, experiments with CK-8-Fe iron were made. An analysis performed in mid-May showed the following result:

	Arnico Iron	CK-8-Fe
C	0.04	0.05 to 0.1
S	0.013	0.025
Mn	0.13	0.15
Si	0.04	0.02 to 0.05
Cu	0.19	0.05
Ni	1.86	0.05 to 0.07
Cr	0.02	-
P	traces	0.015
Al	-	0.05

After early August, sufficient quantities of iron were supplied by Hettstedt.

8. In July and August, sufficient quantities of good quality molybdenum to be used in the construction of transmitting and cathode ray tubes were supplied by the HF Telecommunications Plant (OSW) and the Berlin Incandescent Lamp Plant (Gluehlampenwerk Berlin).
9. In mid-October, a shortage of thorium had caused a critical situation in the plant. Despite all efforts, the quantities needed could not be procured.
10. In August, the nickel supply was the principal bottleneck since the wire supplied was not pure enough. Hence, nickel wire, previously turned down because of the quality, was to be released for processing after being re-treated.
11. In July, numerous failures in the manufacture of E-series tubes resulted from the application of an unsuitable emission paste.
12. In late July, an automatic pump, of 48 parts, manufactured by the Funkwerk Erfurt, and a sealing machine were supplied to the Roehrenwerk "Anna Seghers", Neuhaus (tube plant). [redacted] the manufacture of D-series tubes at Neuhaus met with great difficulties. 25X1
13. [redacted] the Muehlhausen Roehrenwerk allegedly manufactures, among others, AC 11, AF 3, AF 7, AL 4, ACH 1, AZ 11, and AZ 12 tubes. Twenty AC 11 tubes received, in mid-July, by the Erfurt plant for testing were of excellent quality. 25X1
14. Between 23 April and approximately 12 May, two engineers from Hungary visited the RFT Funkwerk Erfurt. They had papers signed by Manager Knobelsdorff (fnu) authorizing them to request samples of all materials they were interested in. One of the two engineers, Rebl (fnu), is head of the finishing department of the Tungram firm, Budapest. He was ordered to acquaint himself with all manufacturing processes at the Erfurt plant in order to cope with difficulties arising at the Tungram plant. The visitors said that the Tungram firm had a labor force of about 600 men and an output of 60,000 tubes per day. In addition to the so-called red series, the manufacturing program included Rimlock tubes of unknown types. The difficulties arising at the Tungram plant were of a different nature from those observed at Erfurt. Rebl was astonished at the long forming periods of usually two to three hours. He said that the Tungram firm achieved equal results in 20 to 30 minutes. Rebl was interested in samples of nickel [redacted] and promised to arrange, through Tungram, to supply the Erfurt plant with the same nickel and thoriated tungsten 25X1 wire.

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15. In May, the tracing department of the plant, which employs numerous helpers, made tracings of all machines needed for the manufacture of tubes. One set of tracings was sent to a central German agency, five others were to be provided with Russian and Polish translations of the German inscriptions used in the tracing process. The labor force of the plant did not know that specialists would be obliged to render compulsory services for the construction of a tube plant abroad.
16. The Erfurt radio plant took over from Telefunken, and is still using old standard specifications for the chemical composition of all materials. All plants were to be coordinated in this respect through the forming of technical committees and subcommittees. Since this coordination was not put into effect by August 1952, the plants were still using their own formulae.
17. According to an engineer employed at the apparatus plant, the management of the apparatus construction department ordered, in August 1952, the gathering, at fairs abroad, of all pamphlets and data on related apparatus manufactured in Western countries, and the procuring, if possible, of samples. The apparatus plant intends to utilize the knowledge of the Western countries and, eventually, to copy some sets.

1.

2.

3.

Comment: Probably VEB Halbzeugwerke Auerhammer, Aue, Saxony.

4.

Comment: Walzwerk fuer Buntmetalle, SAG Marten.

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